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Empowering communities? Local stakeholders' participation in the Clean Development Mechanism in Latin America

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ABSTRACT

Under the United Nations Framework Convention on Climate Change, the Clean Development Mechanism (CDM) requires local stakeholders to participate by sharing their comments on CDM activities. This stipulation aims at promoting social equity, a key element of sustainable development. We draw on the stakeholder theory to examine the local stakeholder participatory process in CDM in four Latin American countries – Brazil, Honduras, Mexico, and Peru. We analyze 625 projects using cluster analysis and multidimensional scaling. The results confirm that in countries that have put in place national procedures for stakeholder consultation, such as Brazil and Peru, the role of national institutions is highlighted. Conversely, in countries with no national government guidelines on local stakeholder participation, such as Honduras and Mexico, private companies dominate the local stakeholder consultation process. In all the four countries, we identify a lack of community involvement in discussions and deliberations on the potential benefits of CDM projects, and a lack of participatory decision-making mechanisms. The projects we analyzed demonstrate that companies use stakeholder participation concept merely as a rhetoric tool to legitimate company activities, ostensibly to create value for all involved, but in practice providing almost no participation to the local communities. The findings also suggest the importance of national legal requirements in ensuring broad engagement at the local level. The stakeholder model established for CDM can be improved in the new market mechanism under the Paris Agreement by empowering local authorities and by formulating guidelines in domestic legal provisions for participatory processes.

1. Introduction

Many companies have been criticized heavily for prospering at the expense of communities, and accused of being the main cause of social and environmental problems (Clark & North, 2006; Frynas, 2005; Idemudia, 2009). Despite business investments, such as implementation of a project, can play a key role in providing economic benefits to a region (Alvarado, Iñiguez, & Ponce, 2017; Iamsiraroj, 2016). However, some of these activities may have more downsides than upsides due to their impact on communities, environment, human rights, and land of local and indigenous communities (Benites-Lazaro, Gremaud, & Benites, 2018).

These socio-environmental problems resulting from economic activities have presented companies with new expectations and dynamics in the social context in which they operate, demanding that they engage more with local stakeholders than they did in the past (Frynas, 2005; Sachs & Rühli, 2011). The stakeholder theory has emerged as a new narrative to understand, or at least reconceptualize, several specific problems related to business responsibility, ethics, and sustainability (Freeman, Harrisonis, Wicks, Parmar, & De Colle, 2010; Parmar et al., 2010). This theory has had considerable influence in several fields such as strategy, ethics, law, public administration, and environmental policy. The use of stakeholder theory in environmental literature is emphasized by analytical techniques and methods of stakeholder participation (Freeman et al., 2010; Reed, 2008).

Notions of stakeholder participation emerged approximately at the same time as the new international economic order, globalization, governance, and sustainable development, which held the promise of a new world order to create humane and democratic institutions geared toward the management of humanity's common affairs (Bäckstrand, 2016; Backstrand, Khan, Kronsell, & Lovbrand, 2010; Overbeek, 2010). These are considered as ways

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to empower marginal groups to influence decision-making processes (Reed et al., 2009), achieve sustainable development (Hörisch, Freeman, & Schaltegger, 2014; Rhodes, Bergstrom, Lok, & Cheng, 2014), and enable policy formation in environmental decision making (Luyet, Schlaepfer, Parlange, & Buttler, 2012; Prell, Hubacek, & Reed, 2009) through collaborative governance arrangements that increase participation across governments, markets, and civil society sectors (Backstrand et al., 2010).

Stakeholder participation has also been reflected in several international agreements, including the Earth Summit, Aarhus Convention, European Water Framework Directive (Luyet et al., 2012), and others. Increased use of stakeholder participation emerged as a norm in sustainable development agendas after publication of the Brundtland Report in 1987. Many have demanded an interactive process involving social dialogue as well as a participation process to guide collective discussions in the search for a consensus (Backstrand et al., 2010). Participatory processes were strengthened after the Earth Summit in 1992 through Agenda 21, which states that "one of the key prerequisites for achieving sustainable development is broad public participation in decision-making" (UNCED, 1992, p. 23.2). Recently, on March 4, 2018, Latin American countries signed, the regional Agreement on Principle 10 to achieve "the Rio Summit's Principle 10" (United Nations, 2018). This agreement enforces the right of access to information, public participation, and justice in environmental matters; and it is expected than can contribute to achieve the sustainable development goals.

Under the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol's Clean Development Mechanism (CDM) requires inclusion of stakeholder comment section in the Project Design Document (PDD). This section should describe how local stakeholders were invited to participate, present a summary of the comments received, and a report how these actors' comments and concerns were addressed by the project's proponents. This requirement has been considered useful in meeting CDM's dual objectives of generating options for cost-effective greenhouse gas (GHG) emission reduction for industrialized countries and delivering local sustainable development opportunities to developing countries (Lazaro & Gremaud, 2017; Maraseni, 2013).

On the one hand, stakeholder participation is used to achieve the performance objectives of an organization (Freeman et al., 2010; Harrison & Wicks, 2013; Usadolo & Caldwel, 2016), since poor governance without the participation of local stakeholders can increase costs and result in negative outcomes of CDM projects, such as reduction in credit ratings (Maraseni & Cadman, 2015). On the other hand, stakeholder participation in project management is seen as an ethical issue that reflects not only economic imperatives but also human-centered values of the companies (Usadolo & Caldwel, 2016).

In this sense, it was claimed that high social participation rates can generate high-quality governance, which in turn, would promote harmonious development processes for the benefit of the community (Kuchler, 2015; Luyet et al., 2012; Reed, 2008). Moreover, effective participation of citizens and communities in decision-making is related to social equity (Agrawal & Gupta, 2005), which is a key element of sustainable development (Hörisch et al., 2014; Reed, 2008). The inclusion and identification of a wide range of stakeholders are advocated as a way to end social and environmental injustices (Hornik, Cutts, & Greenlee, 2016).

Nevertheless, in practice, this procedural requirement is highly problematic (Backstrand et al., 2010; Benites-Lazaro, Mello-Théry, Simoes, & Gnaccarini, 2018) because of the implicit involvement of diverse actors with different interests, and the crucial question of whom or what should be considered as a stakeholder in CDM projects. The CDM faces ongoing criticism, particularly in terms of limited opportunities for local stakeholder involvement and inadequate stakeholder participation (Kuchler & Lövbrand, 2016; Lohmann, 2006). According to several complaints, local communities that are directly affected by CDM projects have not been adequately informed about these projects or their potential impacts (Dong & Olsen, 2015; Schade & Obergassel, 2014).

In this study, we examine local stakeholders' participation in CDM projects in four Latin American countries, namely, Brazil, Honduras, Mexico, and Peru. Drawing on the stakeholder theory (Freeman et al., 2010; Freeman, 1984), we explore how companies that are project proponents describe their stakeholder relationships with local communities in CDM projects, and whether specific national rules and guidelines on how to conduct local stakeholder consultation enhanced local participation. As such, we analyze 625 CDM projects registered between January 2005 and December 2017 and assess them through a hierarchical clustering analysis using the IRaMuTeQ software and a multidimensional scaling method using the T-Lab software.

Under the Paris Agreement, currently, the CDM and its procedural framework are increasingly being treated as a model or tool for the new market mechanism (Johannsdottir & Mcinerney, 2016; Kuchler, 2015). Thus, it is expected that the experiences and lessons gained from CDM's local stakeholder participation practices in Latin America would provide insights to define and identify a structure for local stakeholders at a national level.

The remainder of this paper proceeds as follows. Section 2 presents a review of the literature on stakeholder participation. Section 3 describes the data and methods used in this study. Section 4 presents the results, and Section 5 discusses them. Section 6 presents concluding remarks.

2. Literature review

2.1. Stakeholder theory and participation

The stakeholder theory posits that companies' capacity to generate sustainable wealth over time is determined by their relationships with stakeholders (Rhodes et al., 2014). The transition from a shareholder primacy paradigm to a stakeholder paradigm leads to a change in the company's rationale from profit maximization for shareholders to value creation for all stakeholders (Rahdari, 2016). This emerging paradigm displays the importance of relationships with stakeholders and is likely to result in new forms of double-effect shared value of benefits to both the business and society (Freeman et al., 2010; Porter & Kramer, 2011). On the one hand, companies should contribute to achieving sustainable development (Rhodes et al., 2014). On the other hand, stakeholders are indispensable for companies to secure their legitimacy (Sachs & Rühli, 2011). Here, legitimacy is understood as the social acceptance of a business and its activities (Sachs & Rühli, 2011; Scherer, Palazzo, & Seidl, 2013).

However, stakeholder identification was initially considered as a problem of classification, which made it challenging (Vos, 2003). Since Freeman (1984), p. 25) defined a stakeholder as "any group or individual who can affect or is affected by a firm's operations in achieving its objectives," many theoretical and empirical studies have focused on explaining and understanding this concept (Haigh & Griffiths, 2009). Numerous stakeholder classifications have been suggested over the past three decades (Rahdari, 2016). The debate about "whom or what should be counted as a stakeholder" (Mitchell, Agle, & Wood, 1997) is ongoing. For example, there is much debate over whether the natural environment can or should be considered as a stakeholder of a firm (Driscoll & Starik, 2004; Haigh & Griffiths, 2009; Norton, 2007).

Recent decades have seen an increase in stakeholder engagement and participation as a norm in sustainable development

agendas and for environmental decision making (Hermans, Haarmann, & Dagevos, 2011; Reed, 2008). However, despite the general acceptance of participation in several international agreements, it is not always clear what distinguishes public involvement from stakeholder participation, and who should participate (Luyet et al., 2012). Different typologies of participation have been developed; for example, Rowe and Frewer (2005) propose three types of public engagement: communication, consultation, and participation. In public communication, information flows in one direction. There is no involvement by the public, per se, which means they are passive recipients of the information provided by companies, regulators, and governing bodies. In public consultation, the public's input may be sought (e.g. soliciting public opinion through questionnaires), and there is informal dialogue between individual members of the public and sponsors. Lastly, through public participation, public representatives may actively participate in the decision-making process, for example, through representation on an advisory committee.

Morsing and Schultz (2006) describe three types of stakeholder relations used by companies: (1) First, *stakeholder information* involves one-way communication from companies to their stakeholders. Communication is basically viewed as "telling, not listening." Its purpose is to disseminate information to the public about the organization's activities as objectively as possible, using mediums such as the press, brochures, pamphlets, and magazines, and tools such as numbers, factual information, and figures. (2) Second, *stakeholder response* is based on a two-way asymmetric communication model. Stakeholders are viewed as passively responding to corporate initiatives. Communication is perceived as feedback in terms of finding out what the public will accept and tolerate. (3) Third, *stakeholder involvement* comprises two-way symmetric communication, wherein stakeholders participate and suggest actions to companies.

These typologies highlight that participation is at a stage at which "stakeholders influence and share control over development initiatives and the decision and resources which affect them" (World Bank, 1996, p. 3). In addition, they encourage participation of various social groups in decision making, mainly groups that suffer from participation deficit (Agrawal & Gupta, 2005; Reed et al., 2009). This is because governance is characterized by the involvement of several actors from the public, private, and community sectors in the process of policy decision-making (Guarneros-Meza & Geddes, 2010). Recognition and support for participatory processes aim to increase human-centered values to attain a common purpose through interaction or collaborative effort to solve problems (Maraseni & Cadman, 2015). Thus, participation can be justified in terms of sustainability, justice, equity, and empowerment (Cooke & Kothari, 2001).

However, the stakeholder theory has been criticized for providing powerful rhetorical and discursive devices that have important normative repercussions for legitimate company activities (Fairfax, 2006; Noland & Phillips, 2010), while providing almost no real voice to local communities in the participation process, even in decision-making, setting agendas to achieve sustainable development, or determining social benefits of projects activities. The surge in "stakeholder" rhetoric does appear to reflect the companies' desire to present a good image to the public, by describing how they can contribute to community development and control the social and environmental impacts of their activities (Fairfax, 2006; Lázaro & Gremaud, 2016).

2.2. Stakeholder participation in CDM projects

Stakeholder participation is recognized by the UNFCCC as an essential principle for effective climate governance (Dong & Olsen, 2015). Particularly, Article 6 of the UNFCCC urges all state parties to promote and facilitate "public participation in addressing climate change and its effects and developing adequate responses" (UNFCCC, 1992, p. Article 6 (a), iii). In CDM, the Marrakech Accords established rules for implementing such projects and defined the term "stakeholders" to mean "the public, including individuals, groups, or communities, affected, or likely to be affected" by the proposed project activity (UNFCCC, 2002, Annex 1e).

The Marrakesh Accords provided that the process of stakeholder participation should be verified by a Designated Operational Entity (DOE). Moreover, the Accords recognized that it is the host parties' prerogative to assess whether a CDM project activity assists them in achieving sustainable development (UNFCCC, 2002), according to their own criteria and national requirements (Lazaro & Gremaud, 2017). Such country-specific activity helps them evaluate whether a proposed CDM project contributes to sustainable development and is conducted by the Designated National Authority (DNA). In some countries, national authorities have also established rules and guidelines for local stakeholder participation, which is considered essential to achieve sustainable development.

Fig. 1 shows the seven CDM project cycle steps and the actors involved. Local stakeholders are consulted in the pre-registration stage. In this stage, the project participants (PPs) complete a PDD and request a letter of approval from the DNA of the country that hosts the project activity. The validation stage is performed by the DOE, a private company certifier accredited by the Executive Board (EB) and contracted by the PPs to carry out validation of the project. The DOE, after determining that the project activity meets all relevant requirements, submits the PDD to the EB via the UNFCCC secretariat. The secretariat includes a recommendation on whether the project should be automatically registered or, alternatively, whether a review should be requested (see Classen, Arumugam, Gillenwater, & Olver, 2012).

The registration stage is followed by the monitoring, verification, and certified emission reductions (CERs) issuance steps of the project cycle (Fig. 1). The DOE performs the verification and checks whether the implemented projects have achieved their planned GHG emission reductions by the amount claimed and according to the monitoring plan presented by PPs. After the verification process, the DOE submits a request for issuance of CERs to the EB (see Classen et al., 2012).

As shown in Table 1, the PDD includes basic elements required to assess compliance with CDM requirements. In particular, the stakeholder comments section, which is the objective of this study, provides a brief description of how comments by local stakeholders have been invited and compiled, a summary of the comments received, and a report on how due account was taken of any comments received.

The CDM governance arrangement was cited as an example of hybrid, networked, multi-stakeholder, and collaborative forms of governance, in which state and non-state actors from local to transnational organizations play an important role in depicting the mitigation of climate change (Hoffmann, 2011; Pattberg & Stripple, 2008; Streck, 2004). In spite of this mode of CDM governance and procedures, critics still believe that the current rules about local stakeholder participation do not provide sufficient guidance to project developers and independent validators regarding whom to consult or when and how they should be consulted (Dong & Olsen, 2015). The entrustment of validation and verification to private entities has also been criticized for the inherent potential conflict of interest, given the economic incentive for the DOE to approve projects to gain a favorable reputation among clients (Green, 2008; Lund, 2010). This is because the DOE is selected and paid by the PPs to revise and certify its CDM projects (Lund, 2010).

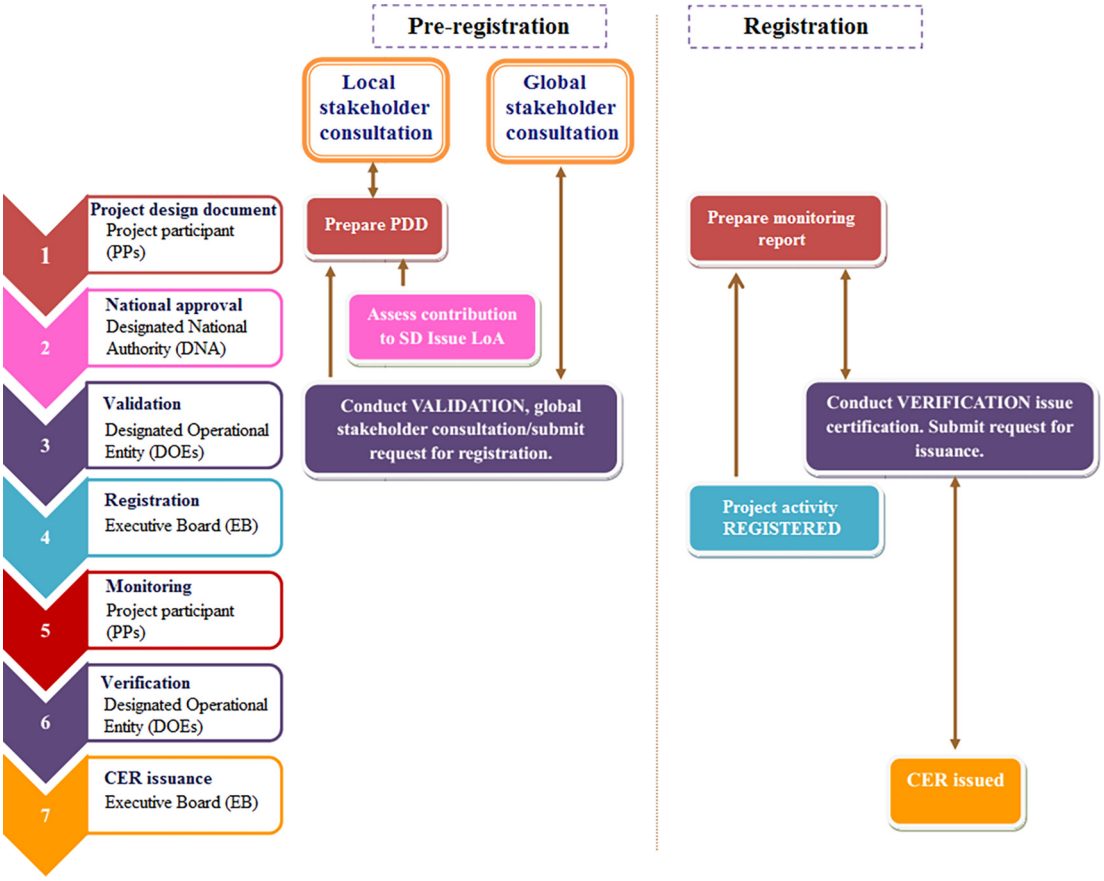


Fig. 1. Project cycle steps and actors involved. *Source*: Based on UNFCCC (2018b) and Classen et al. (2012).

Table 1
Content of the Project Design Document.

Required contents of the Project Design Document
A. General description of project activity
B. Baseline methodology
C. Duration of the project activity/crediting period
D. Monitoring methodology and plan
E. Calculation of greenhouse gas emissions by sources
F. Environmental impacts
G. Stakeholder comments
Annex 1. Contact information of project participants
Annex 2. Information regarding public funding
Annex 3. New baseline methodology
Annex 4. New monitoring methodology
Annex 5. Table of baseline data

Source: UNFCCC (2018a).

There are also complaints that certain "DOEs are reluctant to visit the sites of projects to validate stakeholder consultations, which in some cases have presented duplicate 'cut and paste' comments in PDDs for separate projects" (Phillips & Newell, 2013, p. 657). Others have questioned how the EB delegates significant power and authority to DOEs to validate projects and then later verifies whether they have achieved the claimed emissions reduction (Bailey, Gouldson, & Newell, 2011).

3. Data and method

The CDM projects registered in Latin America, as shown in Fig. 2a), are led by Brazil, followed by Mexico and then Chile. These projects are concentrated mainly in two sectors: energy industries and methane reduction projects. As shown in Fig. 2b), the energy industry sector has the most projects—led by Brazil with 214 projects. These are mainly projects developed for hydroelectric, wind, and cogeneration plants with biomass, which is related to the treatment of sugarcane bagasse. Mexico has the highest number (127) of CDM projects in waste management, developed mainly for pig farms and landfills with the aim to reduce methane (Benites-Lazaro et al., 2018). Peru and Honduras have the highest amount of CDM activity in the energy sector, mainly related to hydroelectric plants, with 54 and 29 projects, respectively.

The data for this study are taken from CDM-registered projects of four Latin American countries from January 2005 to December 2017. The data from CDM-PDDs comprised 342 projects registered by Brazil, 192 by Mexico, 61 by Peru, and 30 by Honduras; as such, 625 total projects are analyzed. The PDDs are easily accessible and available for download from the website of UNFCCC (UNFCCC, 2018a).

The corpus (data) for this study was elaborated from the stakeholder comments section of the 625 PDDs. The corpus was analyzed using descending hierarchical classification (DHC) dendrogram in the software package IRaMuTeQ. A DHC calculates the frequency with which a word occurs in a text and relates the number of occurrences to each word's position in the text. From this calculation, IRaMuTeQ determines a chi-square (χ^2) statistical frequency indicator. The results are presented in matrices, from which IRaMuTeQ generates a DHC dendrogram, illustrating the word relations between the clusters. The word that defines the lexical unit is shown along with its frequency of occurrence (as a percentage) in the segments of text in the cluster relating to its occurrence in the corpus, in addition to the chi-square measure of the word's association with the cluster. The classification with

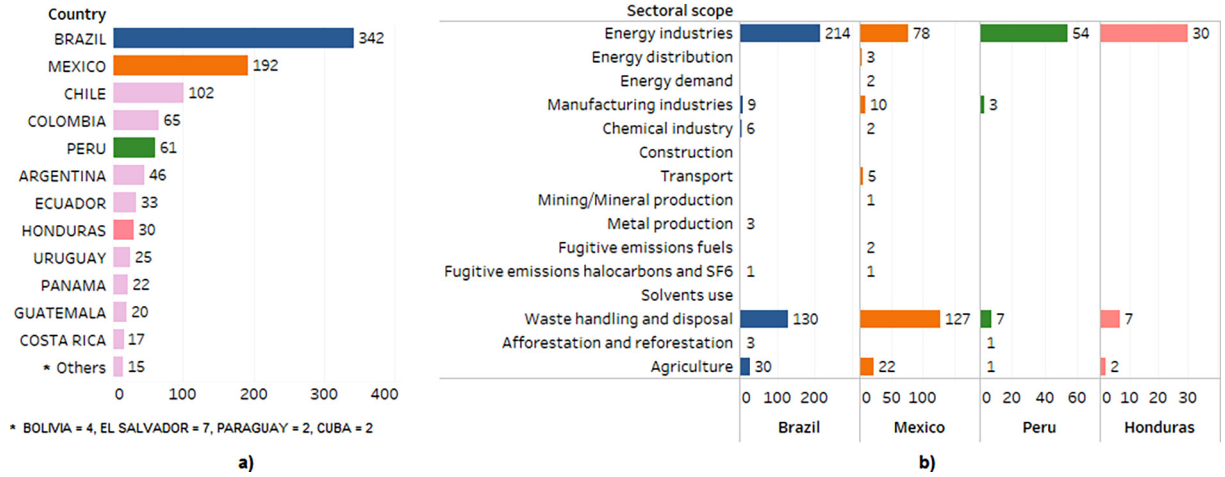


Fig. 2. Distribution of Clean Development Mechanism (CDM) projects by country and sector. Note: One CDM project may belong to more than one scope. *Source*: UNFCCC (2018a).

the number of clusters with the highest chi-square value is considered the most stable classification (Iramuteq, 2017).

We also used the multidimensional scaling (MDS) method implemented in the software package T-Lab. One technique T-Lab uses is the MDS Sammon method, which includes a set of data analysis techniques that allow us to analyze the similarity of matrices by visually representing the relationships among the data within a space of reduced dimensions. In this case, we represent the relationships among the lexical units (words), with different colors denoting groups in the MDS map. These results enable us to interpret the relationships between keywords, constituted by the centrality and relative weights of the keywords. The measure of centrality is an average of association indexes (co-occurrences of the lexical units inside the elementary contexts, used to analyze binary data of the presence/absence type) concerning cluster relationships. The weights are quantities resulting from the computation of how many times a lexical unit occurs within a corpus. The degree of correspondence between the distances among points implied by the MDS map and matrix input is measured by a *stress function*, where a lower stress value (e.g., <0.10) denotes a better obtained adjustment (Lancia, 2018).

4. Results

Fig. 3 shows the DHC dendrogram for the four countries studied. Brazil has a high percentage in cluster 1, which is related to the "national procedure" regarding the requirement of the Brazilian DNA. Here, the procedures to invite local stakeholders to comment on the CDM projects are established by the Interministerial Commission of Global Climate Change (CIMGC). This cluster, also highlights the word "No- comments" that appear with 60% of frequency and "Any-comments" with 66% of frequency of a word occurring in the text. The Mexican dendrogram shows a high percentage in cluster 1, which is related to the "comments received," mainly describing how the CDM developer carried out the process of stakeholder consultation. In Peru, the cluster related to "stakeholder consultation" has a high percentage. It concerns public consultation as developed by the National Environmental Fund (FONAM), a government organization. This institution can be contracted by the project proponent to organize local consultations. In Honduras, the DHC dendrogram for cluster 1 related to "CDM benefits" has a high percentage. This is related to the expected benefits project developers describe in the PDD, such as ways the community could benefit from access to roads, generation of clean energy, reduction of the global warming effect, and job creation during the construction and operational period of the project.

The DHC dendrogram identifies references to DOEs in the text segments in different contexts for the four countries. Brazil mentions the Brazilian DNA with regard to letter of approval requests, comments by local stakeholders, and validation reports issued by an authorized DOE. In Mexico, the word DOE appears to verify that the consultation document and support information were delivered to the DOE without offering many details. In Peru, a word related to DOE appears to indicate that all the information was compiled by FONAM in the final report on social consultations, which is available upon request by the DOE. In Honduras, DOE appears to mention that a full account of all documentation regarding the consultation process can be found in the stakeholder consultation report, which was provided to the DOE for validation purposes.

Fig. 4 presents the MDS map of stakeholder participation in Brazil. The word "comment" has the highest weight value on the MDS map, appearing 1268 times (occurrences) relative to all invitations for comments, including comments received, positive comments, and any comments received. The word with the highest centrality measure is "stakeholder" (with a value of 0.158), followed by "Brazilian" (with a value of 0.150). This means that these words have the strongest links and relationships with lexical units (words) within each thematic cluster (denoted by colors). The fuchsia colored circles relate to the CIMGC, the Brazilian DNA. The word "resolution" has a centrality of 0.104 and a strong relationship with the proponent of the project (yellow), non-governmental organizations (ONG), and social movements (purple). The blue parts indicate words, such as health, education, schools, and investment that are related to activities that project proponents mention as contributions to sustainable development.

As described in several PDDs, invitations to local stakeholders are issued in accordance with the resolution of the Brazilian DNA. For instance, the Oeste de Caucaia Landfill Project states in its PDD that the Brazilian DNA requests comments from local stakeholders, among other information to provide the letter of approval for a project. Resolution n° 7 states that the project proponent must send invitations for comments to at least the following specified stakeholders: NGOs, communitarian associations, municipal governments, environmental agencies, organizations involved in social movement and development for the environment, and state attorney for the public interest (UNFCCC, 2018a, PDD10261 p.71).

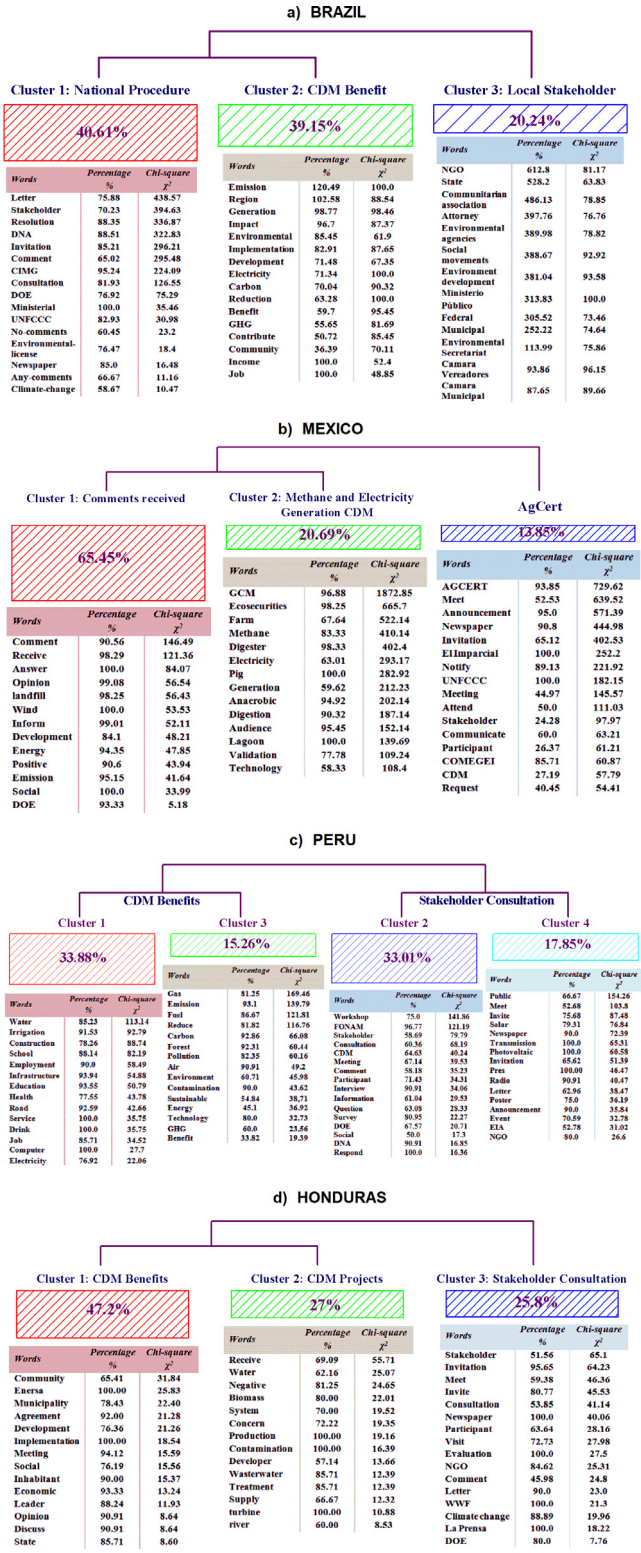


Fig. 3. Dendrogram of local stakeholder participation.

Fig. 5 presents the MDS map for Honduras. The word "community" has the highest weight (221) and centrality (0.131), followed by "stakeholder" (weight 153, centrality 0.112), and "local" (weight 137, centrality 0.11). The colors show a predominance of blue, representing "community," which mainly encompasses authorities of the local community invited for opinion interviews. Fuchsia represents the process of consultation with local stakeholders. Dark green represents the mediums through which local stakeholders were informed, such as newspapers and radio. Brown conveys the environmental impact assessment of hydroelectric projects, implementation of clean energy practices, and improvement of energy generation in the country. In Orange denotes "SERNA" (the Secretary of Natural Resources and Environment), the Honduran DNA, here, keywords with low centrality values and their relative weights do not show a strong relationship.

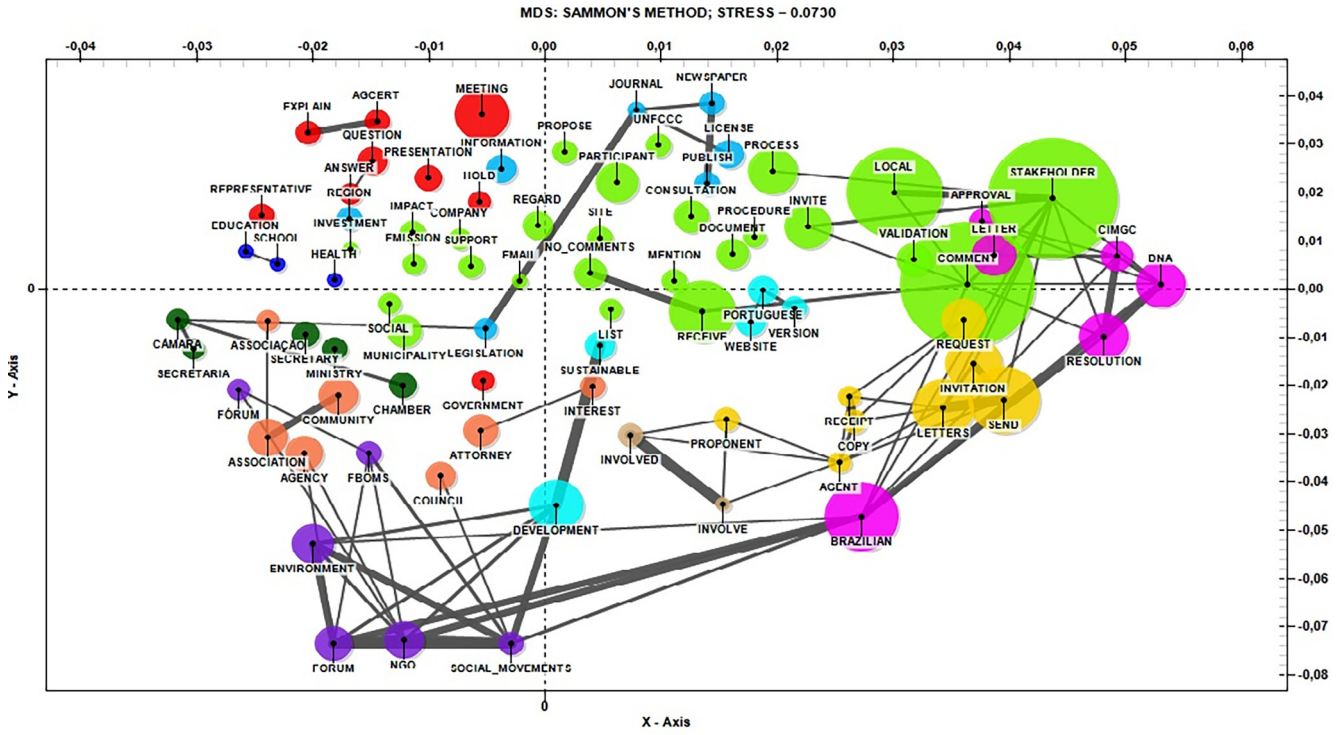
Fig. 6 shows the MDS map for Mexico. The word "stakeholder" has the highest weight (976) and centrality (0.133), followed by "meeting" and "local." These words are related mainly to the company AgCert's invitations to government officials at the federal, state, and local levels. AgCert announcements of the meetings in newspapers, comments from attendees at the stakeholders' meeting, and the stakeholders' meetings of other CDM developers. Orange highlights the participation of AgCert, and yellow highlights the mechanisms through which they informed stakeholders about meetings (e.g., newspapers). Turquoise blue is related to the process of consultation with local stakeholders. Green is related to waste handling projects as well as related benefits, such as employment generation and income. Fuchsia is related to activities that the project proponents mentioned, such as contribution to sustainable development, mainly to environmental sustainability through projects developed for waste management.

Fig. 7 shows the MDS map for Peru. The word "local" has the highest weight (580), followed by "community" (501) and "consultation" (335). The highest measure of centrality is the word "local" (0.164), followed by "community" (0.14) and FONAM (0.088), owing to its relationship with both communities and project proponents. The topics are grouped by colors. Fuchsia includes words such as "stakeholder," "local," and "FONAM," which are related to the stakeholder consultation process. Green denotes words such as "community," "meeting," and "authority." Bleu celeste indicates the social investment plan, which developers needed to implement as mandated by the Peruvian DNA, while considering the needs of communities. Activities such as education and employment creation are indicated in turquoise. Construction of roads and bridges, construction of school rooms, infrastructure improvement for the hospital and local schools, and creation of local job opportunities are shown in purple. The objective of these consultations is to inform local stakeholders about the project and its benefits, identify the social situation of communities, and develop a social investment plan to assist the local population.

5. Discussion

The results of this study (Figs. 3–7) show that in the four countries, CDM developers described that local stakeholders were invited to share comments. However, this is mainly because stakeholder comments are a requirement of the CDM and a part of the project design process for which project proponents are responsible (Benites-Lazaro et al., 2018; Kuchler, 2015; Stuchi Cruz, Paulino, & Paiva, 2017). Thus, CDM developers need to identify their stakeholders and form good relationships with them to gain their acceptance and elicit positive comments on their projects. As Benites-Lazaro and Mello-Théry (2017) show, many CDM developers carried out corporate social responsibility (CSR) activities to seek social legitimacy for their CDM projects.

As shown in Fig. 4, the Brazilian DNA has an important role in elaborating the procedure for stakeholder consultation in CDM projects. It established guidelines to identify stakeholders who should receive invitation letters for providing comments. According to the laws of the Brazilian DNA, project proponents must submit copies of invitations that were sent to local stakeholders, as



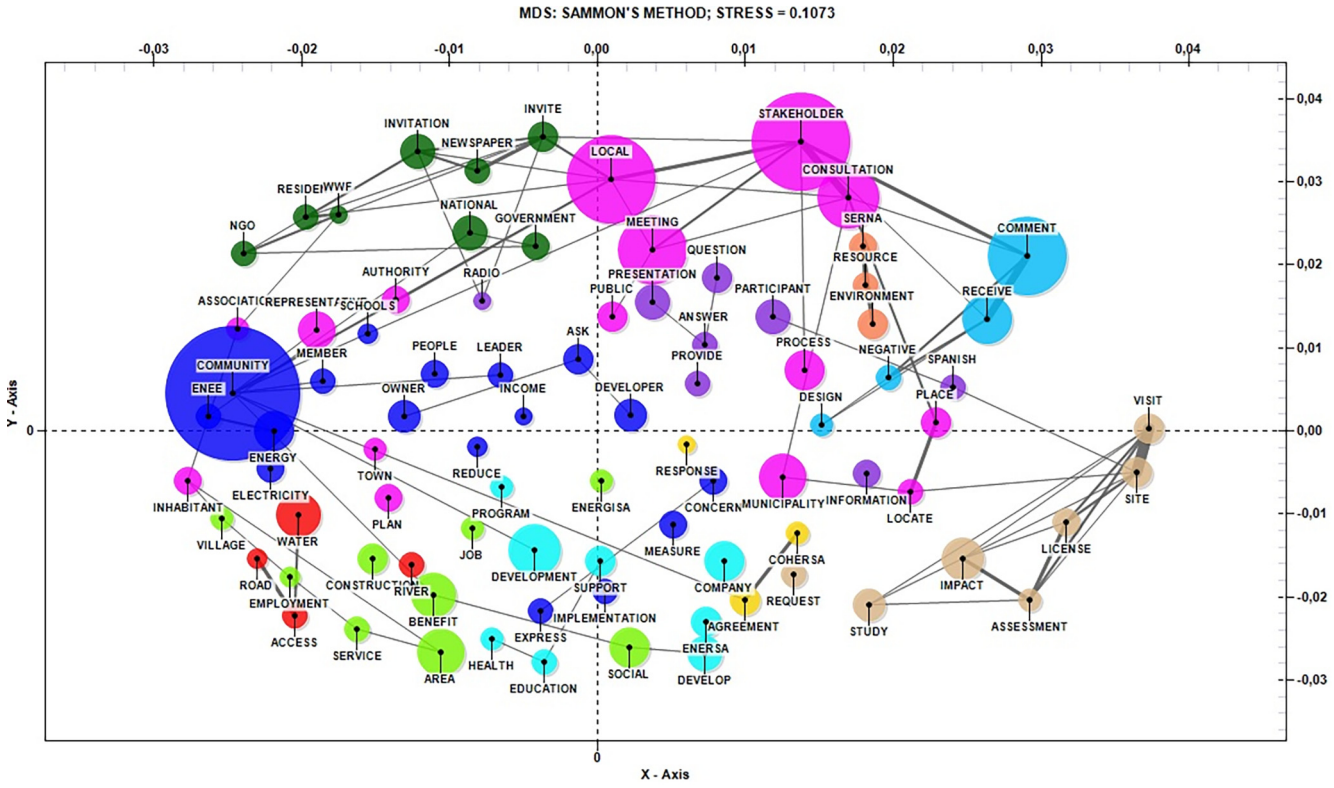
Word	Weight	Centrality	Word	Weight	Centrality	Word	Weight	Centrality
COMMENT	1268	0.148	RESOLUTION	375	0.104	VALIDATION	213	0.069
STAKEHOLDER	1228	0.158	INVITE	341	0.098	CONSULTATION	212	0.061
BRAZILIAN	638	0.150	LETTER	323	0.083	CIMGC	197	0.074
SEND	606	0.141	PARTICIPANT	297	0.067	NO_COMMENTS	187	0.036
LETTERS	512	0.118	NGO	270	0.117	CHAMBER	139	0.067
INVITATION	453	0.125	ASSOCIATION	268	0.083	FBOMS	128	0.068
MEETING	427	0.076	COMMUNITY	266	0.082	SOCIAL_MOVEMENTS	123	0.099
DNA	388	0.099	FORUM	236	0.114	GOVERNMENT	94	0.069
PROCESS	380	0.094	MUNICIPALITY	215	0.055			

Fig. 4. MDS map of local stakeholder participation in Brazil.

verification that their comments were sought, to obtain approval for their CDM activities (Benites-Lazaro et al., 2018; Cole & Roberts, 2011). Resolution n°1 of 2003 and Resolution n°7 of 2008 established the procedure for inviting comments. At a minimum, the following key institutions must be informed: The Brazilian Forum of NGOs and Social Movements for the Environment and Development (FBOMS), agency of the local attorneys and prosecutors, municipality's chamber (mayor and assembly), state and municipal environmental authorities, and local communities' associations. Then, on May 22, 2013, Resolution n° 10 stipulated the holding of a public hearing, should it be impossible to prove that letters of invitation were sent by post to the stakeholders, following the procedures listed in the Resolution n°7. However, the results show that the word "No-comments" and "Any-comments" appears with a high percentage frequency, which indicates that these terms had the highest occurrence within the corpus analyzed. Similar results were shown by Benites-Lazaro et al. (2018), who describe how most projects report not having received enough comments. An example is the Aes Tietê reforestation project; the company Tietê stated that they had sent five hundred invitation letters to actors in the state of São Paulo, but only eleven were answered with positive comments. Our research also aligns with Cole and Roberts (2011) and Friberg (2009) who discuss how detailed Brazilian regulations on public consultations in CDM projects do not extend beyond sending letters inviting comments, and have failed to ensure the participation of a broad group of stakeholders.

In Peru, the DNA undertakes visits to proposed project sites as a criterion of approval for CDM projects, in order to verify the potential social and environmental impacts of the planned projects. The field visit report and specific social consultations are important parts of the CDM project's evaluation process, as well as of the social investment plan that project proponents are required to develop based on the concerns and needs of the local population. FONAM, which was designated by the government to promote the CDM in Peru, plays an important role in conducting social consultations in the project areas (Lazaro & Gremaud, 2017). Project developers can employ FONAM to organize local consultations and identify the main stakeholders through on-site visits or technical studies. FONAM also develops surveys that it distributes to the local public to obtain information about their economic situation and to gauge the local impact of the project, including on climate and other aspects described in several CDM projects analyzed (UNFCCC, 2018a, PDD 2426).

In countries with national procedures for stakeholder consultation, such as Brazil and Peru (Figs. 3, 4 and 7), we observe that companies showed more concern for the process of inviting actors to comment as well as for their relationship with local stakeholders, which was reflected in the CDM benefits described in the PDDs. In Honduras and Mexico, no national government guidelines on



Word	Weight	Centrality
COMMUNITY	221	0.131
STAKEHOLDER	153	0.112
LOCAL	137	0.11
COMMENT	119	0.094
MEETING	98	0.096
CONSULTATION	86	0.088
DEVELOPMENT	67	0.084
RECEIVE	64	0.068
AREA	61	0.074

Word	Weight	Centrality
MUNICIPALITY	57	0.073
WATER	53	0.055
BENEFIT	52	0.068
IMPACT	50	0.074
SOCIAL	45	0.067
ENERGY	44	0.041
COMPANY	43	0.061
PROCESS	43	0.059
REPRESENTATIVE	41	0.066

Word	Weight	Centrality
PRESENTATION	38	0.059
DEVELOP	36	0.056
INVITATION	35	0.055
PARTICIPANT	35	0.051
NATIONAL	34	0.060
SITE	29	0.065
INVITE	29	0.061
LICENSE	24	0.059

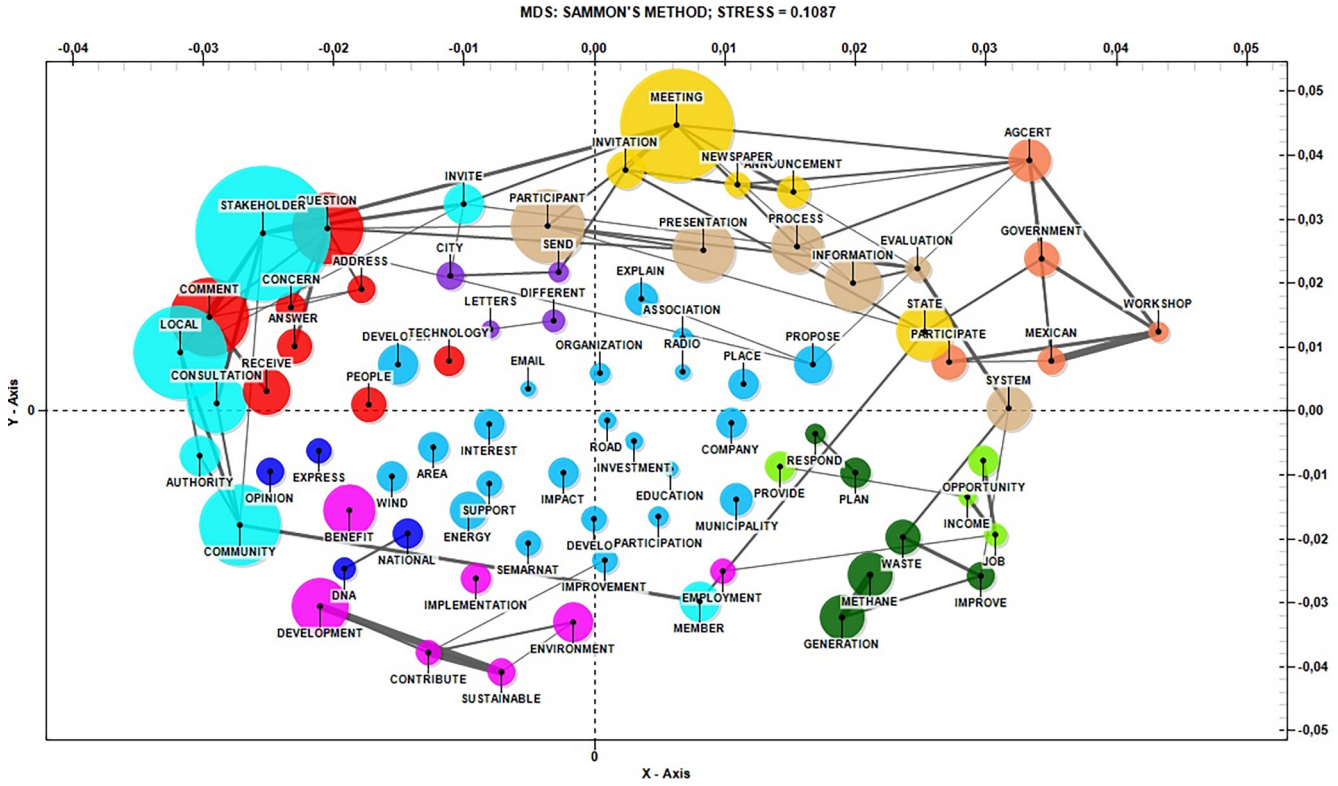
Fig. 5. MDS map of the local stakeholder participation in Honduras.

local stakeholder participation exist. Thus, in contrast to Brazil and Peru, private companies' dominance in the consultation process was highlighted in these countries. For example, in Mexico (Fig. 6), AgCert was a significant participant in CDM, and our findings show that it dominated the process of inviting representatives of communities.

Furthermore, results demonstrate that in countries without national legal procedures on stakeholder participation, stakeholders' responses are sometimes limited to a general acknowledgement to the project on behalf of the local mayor or other local authorities. In most cases, invitations for comments are sent to stakeholders with a conflict of interest. For instance, the CEMEX Yaqui Cement project lists Canacem (National Cement Chamber) as one of its stakeholders that were invited to comment on the project. However, this institution comprises six cement companies, including CEMEX, and had elected a CEMEX executive as its president in 2017. Its interest is obvious and is reflected in the following text described in the PDD: "this entity [Canacem] expressed a positive opinion in favor of the project implementation because it contributes to sustainable development with environmental, social and economic benefits, and positions CEMEX as an example to other enterprises" (UNFCCC, 2018a, PDD 9190 p. 81). This conflicting relationship of Canacem with cement companies was demonstrated in a study by Martínez (2013), who criticizes this institution for awarding certificates to the cement industry for being sustainable and clean despite non-compliance with environmental provisions.

In the case of Honduras, Newell and Bumpus (2012) show findings similar to those in this study, that communities are not actively engaged in or aware about CDM projects. Even if a law existed, it could not have been implemented formally, because verification by authorities would not take place. This fact shows that there is a need to empower the national institutions of many countries. The fragility of national institutions has been studied mostly in relation to the role of DNAs, by assessing their contribution to sustainable development; in some cases, low contribution to sustainable development benefits were related to the DNAs' lack of capacity (Bumpus & Cole, 2010; Lazaro & Gremaud, 2017; Olsen & Fenhann, 2008; Olsen, 2007).

The stakeholders are selected based on convenience, and includes only those who are powerful, can offer legitimacy, or influence the profit of companies, as exposed by Mitchell et al. (1997). Their research also shows that only the most important local stakeholders, such as community authorities, are chosen despite the existence of various stakeholders, including indigenous people. This limited invitation from representatives is not



Word	Weight	Centrality
STAKEHOLDER	976	0.133
MEETING	802	0.105
LOCAL	649	0.117
COMMUNITY	542	0.106
COMMENT	524	0.096
PARTICIPANT	487	0.095
QUESTION	462	0.09
PRESENTATION	395	0.08

Word	Weight	Centrality
CONSULTATION	360	0.093
DEVELOPMENT	358	0.095
STATE	350	0.095
INFORMATION	349	0.077
PROCESS	317	0.065
BENEFIT	306	0.082
RECEIVE	262	0.069
GENERATION	250	0.072

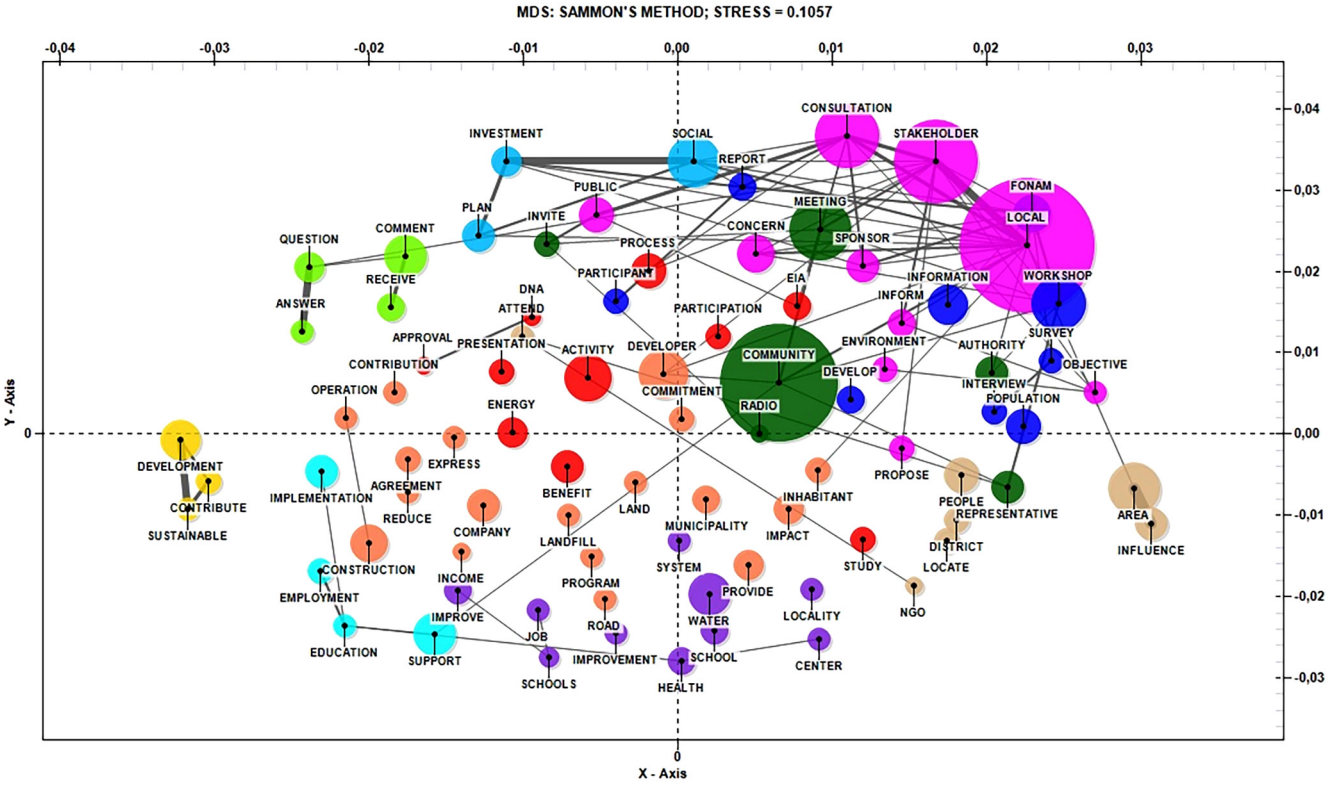
Word	Weight	Centrality
SYSTEM	246	0.60
METHANE	244	0.050
AGCERT	234	0.068
MEMBER	216	0.079
AUTHORITY	212	0.075
INVITE	210	0.073
ENVIRONMENT	200	0.070
GOVERNMENT	173	0.068

Fig. 6. MSD map of local stakeholder participation in Mexico.

consistent with the definition of stakeholders under the CDM guidelines (Schneider, 2009). These guidelines mandate the consultation of not only representatives of the population, e.g., mayors or union stewards, but also make explicit reference to "individuals, groups, or communities" that are likely to be affected by the project. The current situation can consequently destabilize the distribution of participation opportunities and impair, rather than reinforce, the CDM's legitimacy (Kuchler, 2015; Lövbrand, Rindefjäll, & Nordqvist, 2009). As such, this may have the negative effect of certain groups being marginalized from management decisions (Prell et al., 2009).

This study reveals that stakeholder participation requirements have been ignored by CDM developer companies in many cases. Local communities directly affected by CDM projects are not adequately informed about their potential impact. Sometimes, despite strong local opposition, a project is registered anyway, such as the Bajo Aguán project in Honduras and the Barro Blanco hydropower project in Panama (Obergassel et al., 2017; Schade & Obergassel, 2014). The CDM in the hydroelectric plants of Santo Antônio and Teles Pires in Brazil was criticized for their devastating environmental and social impacts, including the destruction of indigenous and traditional communities, forced relocation of the local population, harm to biodiversity and fisheries, and generation of significant carbon emissions (Benites-Lazaro et al., 2018; Fearnside, 2015). In many cases, communities have been kept away from the decision-making process. Local stakeholders have little information, or do not sufficiently understand the technical proposal, to be able to make meaningful decisions about the benefits and impacts of CDM projects, like what happened in the Plantar case; even when FBOMS declared an interest in evaluating the project documents, it was unable to do so due to lack of technical support from the federal government (UNFCCC, 2018a, PDD 1051).

The stakeholder theory aims primarily to create value for all involved, and empower local communities through participation. However, the current study, as well as Lazaro and Gremaud (2017) and Benites-Lazaro et al. (2018), show that CDM projects, particularly in Latin America, focus on economic issues and prioritize CER, but pay little attention to the social dimension, and even less to the stakeholder participation process. The same concern has been raised regarding the role of DOEs (Classen et al., 2012; Green, 2008), which are private companies hired to assess and validate CDM projects. Their role is focused on validating and verifying whether the implemented projects have achieved their planned GHG emissions reduction, rather than assessing the extent of local stakeholder participation. Some such validation reports show that the work of this entity is conducted mainly through desk reviews



Word	Weight	Centrality
LOCAL	580	0.164
COMMUNITY	501	0.14
STAKEHOLDER	335	0.135
CONSULTATION	235	0.121
MEETING	222	0.093
WORKSHOP	191	0.000
SOCIAL	182	0.112
AREA	178	0.098
DEVELOPER	171	0.082

Word	Weight	Centrality
ACTIVITY	151	0.086
WATER	133	0.064
SUPPORT	131	0.08
COMMENT	129	0.078
DEVELOPMENT	123	0.071
INFORMATION	121	0.073
CONCERN	112	0.085
CONSTRUCTION	109	0.072
FONAM	107	0.088

Word	Weight	Centrality
PUBLIC	100	0.071
PEOPLE	97	0.074
PROCESS	97	0.070
POPULATION	94	0.074
PLAN	89	0.074
INFLUENCE	87	0.078
SPONSOR	86	0.077
INVESTMENT	37	0.082

Fig. 7. MDS map of local stakeholder participation in Peru.

rather than visits to project sites; its reports are based simply on the information given by PPs.

The stakeholder theory has influenced the focus on local stakeholder engagement in CDM projects. The participation of stakeholders as a requirement of PDDs was idealized to empower local communities. However, the results of this study show that the participation process exists only for operational reasons. According to the concept of stakeholder relations developed by Rowe and Frewer (2005) and Morsing and Schultz (2006), there is no "public participation" model or "stakeholder involvement strategy" involved in the decision-making process of CDM projects. Proponents simply inform the public that stakeholders' consultation was performed, and report that stakeholders were invited to comment, but did not respond to the invitation, as was observed in the case of Brazil. Others carried out consultation by deliberately choosing stakeholders that favor the project developer, as was observed in the case of Honduras and Mexico.

Consequently, in many CDM projects, socio-environmental conflicts involving local communities emerged. An example of conflicts around particular CDM projects is the campaign against the Plantar project in Brazil because of the unsustainable nature of eucalyptus plantations (Friberg, 2009). Further examples include the conflict around CDM hydroelectric projects in Peru, such as El Platanal, San Gaban II, Caña Brava, and Poechos (UNFCCC, 2018a, PDD 1836), and land tenure conflicts in the case of wind energy projects in Mexico (Juárez-Hernández & León, 2014). The Bajo Aguán project in Honduras also faced accusations of human rights violations (Schade & Obergassel, 2014). These conflicts, mainly in Latin America, have revolved around issues related to lack of participation in decision-making, control and distribution of revenues generated from exploitation of natural resources, and differences in worldviews between the local indigenous communities and companies with regard to their conception about natural resources (Lázaro, 2010; Svampa, 2013).

Then, to win the hearts and minds of people, developers carry out CSR activities (Benites-Lazaro & Mello-Théry, 2017). For example, to foster acceptance for the Lara project, the developer acknowledged the importance of developing healthy relationships with stakeholders (UNFCCC, 2018a, PDD 91). However, one main criticism is that in most cases, CSR activities or sustainable development benefits provide only expected or planned benefits. There is a lack of monitoring whether these activities have actually been achieved. In the case of Peru, for instance, the DNA is required to visit the project site only during the approval stage. The stand

out for the social dimension of the Peruvian DNA, however, can be related to the country's efforts to strengthen its institutionality and credibility vis-à-vis investors, serve as a mediator in the face of social conflicts arising from this type of projects, and, as such, provide an environment that encourages companies to attract investments (Cole & Roberts, 2011; Lazaro & Gremaud, 2017; Merino, 2018).

The stakeholder theory rhetoric of companies wanting to present a good image through high local engagement can be criticized as merely representing a distraction (Fairfax, 2006). According the participation concept, described by Morsing and Schultz (2006) and Rowe and Frewer (2005), local stakeholders' involvement in the CDM project has been weak and in several cases, the consultation process was implemented poorly. Moreover, when community objections are raised, they are either not recorded or deemed insignificant (Newell, Jenner, & Baker, 2009). CDM projects still lack the assurance of a serious commitment to promoting inclusion and considering the opinions of local stakeholders, many of whom are ignored or overlooked (Noland & Phillips, 2010).

Although the stakeholder theory is considered as an alternative to government regulation (Olsen, 2017), market-based governance of stakeholders has been criticized because both deliberative and corporate agendas are mutually exclusive and generate imbalances in the opportunities for participation (Kuchler, 2015; Whitman, 2008). Therefore, public regulation is necessary to ensure markets do not destroy the human and natural component of society (Benites-Lazaro & Mello-Théry, 2017). The participation of stakeholders in environmental decision-making is fundamental to generate a sense of ownership and encourage the implementation of those decisions made (Cadman, Maraseni, Ma, & Lopez-Casero, 2017). In CDM projects, local stakeholder participation is considered to play an important role in achieving sustainable development (Subbarao & Lloyd, 2011). Thus, it has been recommended that an integrated mechanism be established to support and coordinate local stakeholder consultation processes as a way to enforce sustainable development requirements (Benites-Lazaro et al., 2018; Classen et al., 2012). This will help achieve alignment with national regulations as well as link the roles of the DNA and the DOE by permitting the DNA to review the sustainable development performance of projects, either on an annual basis or separate verification phases (Classen et al., 2012).

Furthermore, to promote robust local stakeholder participation, it is recommended that the DNA of host countries include the participation process in its domestic legal provisions by integrating the local stakeholder consultation process with the mechanism for enforcing sustainable development requirements. This recommendation could enhance and empower the DNA to intervene at an early stage of the project design, and go beyond merely assessing the proposed project's contribution to sustainable development (Classen et al., 2012).

6. Conclusions

This study shows that despite rules being negotiated internationally for CDM, the results are quite different at the national level. For example, Brazil and Peru established national rules to perform local stakeholder consultation. Thus, there is evidence that some projects developers have made efforts to interact with local stakeholders, including communities in areas surrounding the project, such as the case in Peru. Honduras and Mexico do not have a national procedure for stakeholder participation, which presents a risk that only those stakeholders who favor the CDM project will be invited to share comments. For example, in Mexico, Cemex interviewed the National Cement Chamber, which Cemex is a part of. In general, in all the four countries, we found that despite the project proponents confirming compliance with local stakeholder consultation, there was no participatory decision-making mechanism, which reveals a lack of community involvement in these activities.

Local stakeholder participation in the CDM could be improved by enforcing monitoring mechanisms and empowering the role of the DNA in host countries, so that the participation process is included in domestic legal provisions. For instance, in Peru, as criteria to approve CDM projects, the DNA established the consultation report and requirement of field visits to the project area to verify the potential environmental and social impacts and to ensure implementation of activities that contribute to sustainable development. In Brazil, the DNA elaborated stakeholder consultation procedures for CDM projects and established guidelines to identify stakeholders who should be invited to share comments. It also stipulated the holding of a public hearing should it be impossible to prove that letters of invitation to give comments were sent. These lessons could serve to improve and develop good practice guidelines for local stakeholders' participation.

Further in-depth research should be undertaken to examine other cases of countries establishing national rules to carry out local participation in CDM projects as well as the effectiveness of these rules. In addition, there is a need to explore the role of DOEs by analyzing the validation report related to the stakeholder consultation process, for instance.

Conflict of interest

None.

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